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Amendment

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In a preferred embodiment, disk grasping means for grasping and releasing the desired disk is provided in sync with the engagement and disengagement of the catch of the disk hold link when the holder plate is raised and lowered by the disk selector.

In such an aspect, by synchronizing the release of the desired disk from the disk holding means and the grasping of the desired disk by the disk grasping means, the retraction of the holder plate for playing back the desired disk can be performed smoothly.

A preferred embodiment is a disk alignment mechanism for aligning a desired disk when the desired disk is transferred between a disk holder capable of housing a plurality of disks and a drive unit for playing back the desired disk, comprising: disk grasping means for grasping only the desired disk by separating the same from the disk holder in a space that is produced by dividing the disk holder, wherein a disk holding mechanism, which releases the center hole of the disk in sync with the grasping of the disk by the disk grasping means and holds the center hole of the disk in sync with the release of the disk by the disk grasping means, is provided in the disk holder.

Further, when the desired disk is transferred from the disk holder to the drive unit, the disk grasping means is able to temporarily grasp the desired disk and, therefore, the disk holder may perform the operations of division and retraction from the

desired disk, whereby the cam and drive mechanism and so forth can be simplified and the transfer operation can be performed smoothly.

In such an aspect, by synchronizing the disk holding mechanism and disk grasping means, the transition from the disk release of the disk holder to the disk alignment state of the disk grasping means and disk storage in the disk holder can be performed smoothly and reliably.

In a preferred embodiment, a disk clamping mechanism, which releases the center hole of the disk in sync with the grasping of the disk by the disk grasping means and holds the center hole of the disk in sync with the release of the disk by the disk grasping means, is provided in the drive unit.

In such an aspect, by synchronizing the disk clamping mechanism and disk grasping means, the transition from the state of disk alignment by the disk grasping means to the placing of the disk on the drive unit, disk release of the drive unit, and then the state of disk positioning by the disk grasping means can be performed smoothly and reliably.

A preferred embodiment is a disk alignment mechanism for aligning a desired disk when the desired disk is transferred between a disk holder capable of housing a plurality of disks and a drive unit for playing back the desired disk and when the desired disk is ejected from the disk holder, comprising: disk grasping means for grasping only the desired disk by separating the same from

the disk holder in a space that is produced by dividing the disk holder, wherein the disk grasping means comprises a disk stopper mechanism that grasps the outer edge of the desired disk and a disk feed mechanism that feeds the desired disk in and out of the disk holder; the disk feed mechanism is provided so as to be able to move in the direction of contact with and separation from the disk in order to contact the disk following the operation to grasp the desired disk by the disk stopper mechanism.

In such an aspect, when the disk is transferred between the disk holder and drive unit and ejected, because the disk feed mechanism is in contact with the disk in a state where the disk stopper grasps the disk, the outer circumference of the disk is no longer free when the disk feed mechanism is in contact with the disk, swing caused by vibration is prevented, and the disk can be reliably transferred and ejected.

In a preferred embodiment, the disk feed mechanism comprises a loading roller that feeds the disk by sandwiching the disk.

In such an aspect, because disk swing can be prevented, even when a constitution in which the disk is sandwiched by a loading roller is adopted, a mechanism for opening and closing the loading roller in accordance with the disk swing width need not be provided, whereby miniaturization resulting from the small foot-print can be implemented.

In a preferred embodiment, the disk grasping means comprises a disk guide that guides the movement of the disk by contacting

the disk between the operation to grasp the desired disk by the disk stopper mechanism and the operation to contact the disk by the disk feed mechanism.

In such an aspect, because the disk guide abuts against the moving disk, disk swing is further prevented and the disk can be even more reliably transferred and ejected. Further, because the progressive direction of the disk can be changed by the disk guide, an effective application of space can be achieved by shifting the disk insert position and disk holder position.

In a preferred embodiment, the disk guide is provided so as to move in the direction of contact with and separation from the disk in accordance with the movement of the disk feed mechanism.

In such an aspect, because it is possible to make the disk guide contact the disk only when the disk is moving and to retract the disk guide at other times to avoid the obstruction of other members, space can be effectively adopted.

In a preferred embodiment, the disk grasping means comprises a disk feed mechanism that feeds a disk into and out of the disk holder.

In such an aspect, by combining usage of the disk feed mechanism with the disk grasping means, a reduction in the number of members is possible and miniaturization of the disk drive can be implemented.

In a preferred embodiment, the disk feed mechanism comprises a loading roller that is provided so as to be capable of moving

in the direction of contact with and separation from the desired disk.

In such an aspect, when feeding and aligning the disk, the disk is fed and grasped reliably by moving the loading roller in the direction of contact with the disk and, when the disk is played back, interference with the disk can be avoided by moving the loading roller in a direction away from the disk.

In a preferred embodiment, the disk grasping means comprises a disk stopper mechanism that grasps the outer edge of the desired disk.

In such an aspect, as a result of the outer edge of the disk being grasped by the disk stopper mechanism, the disk is not an obstacle to the disk holder and drive unit and reliable alignment is possible. When this is combined with a disk feed mechanism in particular, more reliable and accurate alignment is possible, which results in resistance to vibration.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an exploded perspective view of an embodiment of the disk drive of the present invention;

Fig. 2 is a transparent planar view during disk loading of the embodiment in Fig. 1;

Amended claims

(1 to 6 are not amended)

5. A disk drive, comprising the disk holder according to any one of claims 1 to 4, wherein

a plurality of the holder plate in the disk holder are arranged stacked such that each holder plate can be individually raised and lowered,

the disk drive further comprising:

a drive unit for playing back a desired disk;

a disk selector that forms a space above and below a desired disk by raising and lowering a holder plate in the disk holder; and

drive moving means for moving the drive unit into the space formed as a result of raising and lowering the holder plate.

6. The disk drive according to claim 5, wherein disk grasping means for grasping and releasing the desired disk is provided in sync with the engagement and disengagement of the catch of the disk hold link when the holder plate is raised and lowered by the disk selector.

7. (Deleted)

8. (Deleted)

9. (Deleted)

10. (Deleted)

11. (Amended) A disk alignment mechanism for aligning a desired disk when the desired disk is transferred between a disk holder capable of housing a plurality of disks and a drive unit for playing back the desired disk, comprising:

disk grasping means for grasping only the desired disk by separating the same from the disk holder in a space that is produced by dividing the disk holder, wherein

a disk holding mechanism, which releases the center hole of the disk in sync with the grasping of the disk by the disk grasping means and holds the center hole of the disk in sync with the release of the disk by the disk grasping means, is provided in the disk holder.

12. (Amended) The disk alignment mechanism according to claim 11, wherein a disk clamping mechanism, which releases the center hole of the disk in sync with the grasping of the disk by the disk grasping means and holds the center hole of the disk in sync with the release of the disk by the disk grasping means, is provided in the drive unit.

13. A disk alignment mechanism for aligning a desired disk when the desired disk is transferred between a disk holder capable of housing a plurality of disks and a drive unit for playing back the desired disk and when the desired disk is ejected from the disk holder, comprising:

disk grasping means for grasping only the desired disk by separating the same from the disk holder in a space that is produced by dividing the disk holder,

wherein the disk grasping means comprises a disk stopper mechanism that grasps the outer edge of the desired disk and a disk feed mechanism that feeds the desired disk in and out of the disk holder;

the disk feed mechanism is provided to be capable of moving in the direction of contact with and separation from the disk in order to contact the disk following the operation to grasp the desired disk by the disk stopper mechanism.

14. The disk alignment mechanism according to claim 13, wherein the disk feed mechanism comprises a loading roller that feeds the disk by sandwiching the disk.

15. The disk alignment mechanism according to claim 13 or 14, wherein the disk grasping means comprises a disk guide that guides the movement of the disk by contacting the disk between

the operation to grasp the desired disk by the disk stopper mechanism and the operation to contact the disk by the disk feed mechanism.

16.. The disk alignment mechanism according to claim 15, wherein the disk guide is provided so as to be able to move in the direction of contact with and separation from the disk in accordance with the movement of the disk feed mechanism.

17. (Added) The disk alignment mechanism according to claim 11 or 12, wherein the disk grasping means comprises a disk feed mechanism that feeds a disk into and out of the disk holder.

18. (Added) The disk alignment mechanism according to any one of claims 11, 12, and 17, wherein the disk feed mechanism comprises a loading roller that is provided to be able move in the direction of contact with and separation from the desired disk.

19. (Added) The disk alignment mechanism according to any one of claims 11, 12, 17, and 18, wherein the disk grasping means comprises a disk stopper mechanism that grasps the outer edge of the desired disk.